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RESULTATIVE VERBS AND OTHER PROBLEMS.

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THE SO-CALLED RESULTATIVE VERBS IN MANDARIN CHINESE ARE STUDIED WITHIN THE GENERAL FRAMEWORK OF A TRANSFORMATIONAL GRAMMAR. THE RESULTATIVE VERBS ARE GENERALLY CONSIDERED AS CONSISTING OF TWO COMPONENTS--A VERBAL COMPONENT FOLLOWED BY A RESULTATIVE OR DIRECTIONAL COMPLEMENT. OTHER PROBLEMS RELATED TO COMPLEMENTS ARE ALSO TOUCHED UPON, FOR EXAMPLE, THE PRENOMINAL DEMODIFICATION, THE POSTVERBAL DECOMPLEMENT, AND OTHER KINDS OF COMPLEMENTS THAT CAN OCCUR WITH VARIOUS VERBS. THE SOLUTION PROPOSED IS TO CLASSIFY THE RESULTATIVE VERBS INTO TWO MAIN GROUPS, THE MORE PRODUCTIVE OF WHICH IS GENERATED FROM GENERALIZED TRANSFORMATIONS. A SKETCH OF THE SYNTACTIC STRUCTURE OF MANDARIN, CONSISTING OF CONSTITUENT STRUCTURE RULES, TRANSFORMATIONAL RULES, AND A SAMPLE LEXICON, IS PROVIDED AS THE BASIS OF DISCUSSION. (IT)

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PROGRESS REPORT ON MANDARIN TONE STUDY
Robert Brotzman
Division of Linguistics

RESULTATIVE VERBS AND OTHER PROBLEMS
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PRE-NOMINAL MODIFIERS
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TWO ASPECT MARKERS IN MANDARIN
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Resultative Verbs and Other Problems[1]

Anne Yue Hashimoto

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I. Introduction

The present paper emerges from an investigation into the nature of the so-called resultative verbs in Mandarin, within the general framework of a transformational grammar. Other problems related to complements are also touched upon, for example the pre-nominal de-modification, the postverbal de-complement, and other kinds of complements that can occur with various verbs. Since these problems cannot be discussed without reference to the general framework of the grammar of the language, and to their relation to other types of constructions, a rough sketch of the syntactic structure of Mandarin is provided as the basis of discussion.

The resultative verbs are generally considered as consisting of two components: a verbal component followed by a resultative or directional complement. They are similar to simple verbs in that they can be preceded by the negative marker and followed by the aspect markers -le, -guo. They are sometimes called potential verbs[2] because of their peculiar behavior in the formation of the potential mode. The traditional treatment is to group them all into one class[3] or into two classess:[4] those with a resultative complement and those with a directional complement; or simply to describe them as the combination of verbs and complements.[5]

With such kinds of analysis, several problems arise. Not only are the so-called resultative verbs very non-uniform in their formation, but they also behave differently in relation to other units or sentence types. For example, chī wán and chī bǎo are both considered resultative verbs, with very similar structures. Yet the former can occur in a BEI-sentence and the latter cannot. That is, such a sentence as (1) is grammatical, but (2) is not.

(1) fàn gěi chī wán le

(2) *fàn gěi chī bǎo le

---

(1) 'the rice is finished'.

(2) *'the rice is eaten full'.

Similarly, zhǎozháo can occur in a BA-sentence, but tīngjian cannot. In pǎo chū lai, the aspect marker -le will occur after the first morpheme: pǎo -le chū lai; but in ná chū lai, -le may occur after either the first or the third morpheme: ná -le chū lai or ná chū lai -le.

The present paper will explore some of the possibilities of solving these problems through the use of transformational analysis. The type of resultative verbs which occur only in the potential mode, such as duideqǐ, mǎibuqǐ ..., has not been included.

II. Constituent Structure

The constituent structure of Mandarin is very much simplified in this presentation. Only those features related to the present problems are included. The following rules will be presented in comparison with those in "Some Syntactic Rules in Mandarin,"[6] hereafter abbreviated SRM.

Start with #S##S# ... #S#

CS1. S ---→ Nom + VP (F)

A sentence consists mainly of a Nominal, a Verb Phrase, and optionally a final particle. All underlined symbols refer directly to the sample lexicon, and will not be further developed elsewhere in the constituent structure.

CS2. $VP \longrightarrow (BU) \left\{ \begin{matrix} VB_{st} \\ VB_{nst} \\ VB_{m} \end{matrix} \right\}$

VP consists of three kinds of verbals: Stative Verbal (VB_{st}), Nonstative Verbal (VB_{nst}), or Middle Verbal (VB_{m}), optionally preceded by BU, the general negative formative.[7] As compared with the first rule in SRM, VB_{st} and VB_{nst} include almost all of the subclasses of VP_{TR} and VP_{NTR}, but the labelling is not interchangeable. The dichotomy of the Verb Phrase into transitive and intransitive in SRM is based on whether a verb may be followed by a Nom or complement. Departure from this classification is due to the fact that certain co-occurence restrictions can be stated more simply in the present rule, which favors a tripartite division. Another verbal is set up in order to account for

the type which does not fit in with the already established types, but which shares their properties.

$$\underline{CS3}.\quad VB_{st} \dashrightarrow \left\{ \begin{array}{l} \left\{ \begin{array}{l} \underline{shi} \\ (\underline{EMP})\ \ \underline{V_{qua}} \end{array} \right\} \text{Nom} \\ \left\{ \begin{array}{l} \text{EMP} \\ (\text{de})\ \text{C} \end{array} \right\} \qquad \left\{ \begin{array}{l} \underline{\text{ADJ}} \\ \underline{V_{qub}} \end{array} \right. + \text{Nom} \left. \right\} \\ \underline{V_{loc}} + \text{Nom}_{loc} \end{array} \right\}$$

The stative verbal is characterized by the feature of nonco-occurrence with ASP, that is, the verbs of this category do not take such aspect suffixes as -guo or -le. This is its main distinction from the nonstative verbal. Five types of verbs are included: the copula shi, V_{qua} which is optionally preceded by an emphatic marker EMP, adjectives ADJ, verbs denoting quality V_{qub}, and the locative verb V_{loc}. In SRM, the copula is considered as a subclass of the classificatory verb, which also includes such verbs as xing. However, the verb xing can only be followed by a very restricted nominal consisting of family names. If it were to be included in the present rule, it would seem more feasible to treat it as a separate class. Transitive verbs of quality in SRM are divided into V_{qua} and V_{qub} here, due to their difference in co-occurrence restrictions. V_{loc} is not included in SRM.

All these verbs are distinct from each other both by their co-occurrence with other elements and by the different transformations they will enter into. Among them, only ADJ and V_{qub} will be of immediate concern to us.

C stands for any complement. The justification for placing it before instead of after the verb, where it appears, will be given below. Nom_{loc} stands for a locative nominal, which will be expanded in CS15.

CS4. VB_{nst} ---> { (ASP) { { V_{tel} / V_{quo} } + Nom } C ; { { V_p / V_c } Nom ; V_{do} + Nom + Nom (FP) } ; ({ ASP / de }) { V_{mo} (Nom$_{loc}$) (DIR) ; (C) { V_{tr} / V_{intr} } + Nom } (FP) }

The nonstative verbal consists of eight types of verbs, all of which may co-occur with ASP. The reason for placing ASP in front of instead of after the verb will be given below (p.). V_{tel} stands for telescoping verbs, V_{quo} for quotative verbs, V_p for possessive verbs, V_c for conceptual verbs, V_{do} for verbs with double objects, V_{mo} for verbs of motion, V_{tr} for transitive verbs, and V_{intr} for intransitive verbs. V_{tel}, V_{quo}, and V_{do} correspond to verbs bearing the same label in SRM. V_{do} is not considered as a subclass of transitive verbs, since it does not have the potential mode. V_p, V_c, and V_{mo} are not included in SRM. V_{tr} and V_{intr} will be further expanded in CS6, 7, and 10. V_{tel} and V_{quo} are obligatorily followed by a complement formative C.

De may denote either the potential modal marker de or the marker introducing a descriptive complement. Other modal auxiliaries such as hui, gǎn, kěn, nénggòu, kěyǐ, etc. are not included, for further studies need to be made on their co-occurrence restrictions with different types of verbs. Historically, the de in these two cases probably comes from different origins. For the present purpose, however, it is more economical to treat them together, since they require the same kind of co-occurrence restrictions. For example they are both mutually exclusive with ASP or EMP, as will be seen in CS5.

FP stands for frequency phrase, which will be expanded in CS8 and 9, where it will be seen that FP corresponds to the formatives Num ANV and DUPV in SRM. DIR stands for directional markers, lai and qu,

which are comparable to the German 'her' and 'hin'.

V_{mo}, V_{tr}, and V_{intr}, together with ADJ, are important in the formation of the so-called resultative verbs. In this paper, most of the resultative verbs will be generated by generalized transformations. That is, the formation of these verbs ultimately comes from two underlying strings. Another way of handling the resultative verbs is to treat them within the constituent structure component,[8] keeping the first component as verbs, and treating the second component as complements. This alternative is rejected, for such a solution involves complication in the constituent structure rules, leading to the formulation of optional rules which are undesirable. Further discussion in this respect will be given in connection with ETR2.

The use of crossed brackets denotes the obligatory choice of at least one of the bracketed optional forms.

CS5. $VB_m \longrightarrow \left(\left\{ \begin{matrix} \text{ASP} \\ \text{EMP} \\ \text{de (C)} \end{matrix} \right\} \right) \underline{V_m} + \text{Nom}$

The middle verbal shares characteristics of both the stative and nonstative verbals. Middle verbs (V_m) may co-occur with ASP or EMP.

In general, the verb and its following Nom are closely related; there are many transformations which involve them (cf. ETR2, 3, 4, PTR11,...). It is therefore more convenient to place ASP and de(C) before and not after the verb in the constituent structure, so that these elements, which are not pertinent in such kinds of transformations, need not be specified. Later, there will be obligatory transformational rules switching them back to wherever they belong. Moreover, they are mutually exclusive with the pre-posed formative EMP. In this way, a co-occurrence restriction rule is saved.

CS6. $V_{tr} \longrightarrow \left\{ \begin{matrix} \underline{V_{ta}} & \text{if: } C+__ \\ \left(\begin{matrix} \underline{V_{ta}} \\ \underline{V_{tc}} \\ V_{tp} \end{matrix} \right) & \text{elsewhere} \end{matrix} \right\}$

Transitive verbs are distinguished from other verbs by having the BEI-transformation (PTR9). They are classified into three types: V_{ta}, V_{tc}, and V_{tp}. V_{ta} consists of active transitive verbs which can undergo the resultative transformations and may take descriptive complements.

It corresponds to Vt_{action} which appears in the 5th rule in SRM. V_{tc} and V_{tp} consist of compound verbs which do not have such properties. V_{ta} and V_{tc} may have the BA-transformation while V_{tp} may not. V_{tp} corresponds roughly to $Vt_{perceptual}$ plus $COMP_p$ in SRM.

BA and BEI are not included in the constituent structure, but will be introduced in the simple transformations (PTR8, 9), for although they never occur with <u>simple</u> intransitive verbs, they may occur with intransitive verbs if the latter undergo ETR4 and form resultative verbs. If BA and BEI are introduced as formatives in the constituent structure, strings from ETR4 with intransitive verbs will be excluded from the BA and BEI transformations.

V_{tc} and V_{tp} are considered as resultative verbs traditionally. However, they differ from other resultative verbs in their formation. They consist of at least one bound form. For this reason, they are considered as compounds.

<u>CS7</u>. $V_{intr} \longrightarrow \left\{ \begin{array}{l} \underline{V_{in}} \\ \\ \underline{V_{ia}} \end{array} \right\}$

Intransitive verbs may be active (V_{ia}) or nonactive (V_{in}). V_{ia} corresponds to Vi_{action} and V_{in} to Vi_{status} in SRM. Only active intransitive verbs can occur as first components of resultative verbs.

<u>CS8</u>. FP $\longrightarrow$ Num $\left\{ \begin{array}{l} R_v \\ \\ \underline{Cl_v} \end{array} \right\}$ if: $\left\{ \begin{array}{l} V_{ta} + Nom \\ \\ V_{ia} \end{array} \right\}$ ——

A frequency phrase preceded by either V_{ta} or V_{ia} may consist of a numeral phrase followed by reduplicated verbs (R_v) or verbal classifiers (Cl_v). Reduplication of verbs is treated differently from that offered in SRM, where a reduplicative formative is introduced with different kinds of verbs which may be reduplicated. In this paper, it is considered as an optional reduction from a frequency phrase (cf. PTR12).

<u>CS9</u>. FP $\longrightarrow$ Num + Cl_v

A frequency phrase preceded by any other verb may consist of a numeral phrase followed only by verbal classifiers. That is, <u>zǒu yī zǒu</u> is grammatical, but not *<u>tīngjiàn yī tīngjiàn</u> or *<u>gěi yī gěi</u>.

CS10. $V_{ta} \longrightarrow \left\{ \begin{matrix} \underline{V_{taa}} \\ \underline{V_{tab}} \\ \underline{V_{tam}} \end{matrix} \right\}$

Active transitive verbs are subdivided into three classes: V_{taa}, V_{tab}, and V_{tam}. Of these, only V_{tam} can undergo both the directional and the motion transformations (ETR2, CTR17), V_{tab} can have the directional transformation, while V_{taa} does not have these transformations.

The classification of verbs given in the above rules is tentative and restricted. They only serve to illustrate some of the possibilities of classifying verbs according to their potentialities for different kinds of transformations, with special reference to the resultative, BA, BEI, potential,...., transformations.

CS11. Nom ---> NP (MOD)

The nominal consists of a nominal phrase optionally followed by a modifier formative (MOD), which will be replaced by nominalized elements from another string by ETR1. Later an obligatory permutation rule will switch MOD to a position either before or after DET (PTR7a).

CS12. NP ---> $\left\{ \begin{matrix} (\text{DET}) \left\{ \begin{matrix} \text{N} \\ \underline{\text{N}_{pr}} \end{matrix} \right\} & \text{if: } ___ + \text{MOD} \\ \left\{ \begin{matrix} (\text{DET}) \left\{ \begin{matrix} \text{N} \\ \text{N}_{pr} \end{matrix} \right\} \\ \underline{\text{PP}} \qquad (\underline{\text{men}}) \end{matrix} \right\} & \text{elsewhere} \end{matrix} \right\}$

NP is roughly divided into three types: nouns (N), proper names (N_{pr}), and pronominals (PP), which may be followed by the plural marker men. Only the former two may be optionally preceded by determiners (DET), and may be modified by nominalized elements introduced by MOD.

This and the following rule correspond roughly to the 4th rule in SRM; N_{pr} corresponds to NAME, PP coresponds to PRONOUN, N_h to $\text{NOUN}_{\text{human}}$ and N_{nh} to $\text{NOUN}_{\text{nonhuman}}$.

CS13. N ---> $\left\{ \begin{matrix} \underline{N_h} \quad (\underline{\text{men}}) \\ \underline{N_{nh}} \end{matrix} \right\}$

N consists of human nouns (N_h) or nonhuman nouns (N_{nh}). Only human nouns may be followed by the plural marker.

CS14. DET ---> (D/Num) Cl

Determiners are of three types: demonstratives (D), numerals (Num), and classifiers, in that order. In general, demonstratives and numerals must be followed by classifiers before they can occur before nouns. There are some cases in which they are exclusive with classifiers, when they occur before certain nouns, such as nián 'year', rì 'day' ... etc. However, such cases are not included here. Co-occurrence restrictions between nouns and classifiers, as suggested in the 10th rule of SRM, are not dealt with in this paper.

CS15. Nom_{loc} ---> N_{nh} + lǐ

The locative nominal is tentatively considered to consist of nonhuman nouns followed by the locative suffix lǐ.

III. Sample Lexicon

F ----> le, ma, ne,...

EMP ----> hěn, hǎo, shífēn (very), zuì (most),...

V_{qua} ----> xiàng (resemble),...

ADJ ----> gānjing (clean), xiǎng (loud), gān (dry), jǐn (tight), hǎo (good), píng (level), huài (bad), gāo (high), dī (low), dòng (cold), máng (busy), kuài (quick), lèi (tired), bǎo (full), è (hungry), guì (expensive), shēnqì (angry), pàng (fat),...

V_{qub} ----> pà (afraid),...

V_{loc} ----> zài (locate),...

ASP ----> -le (perfective aspect), -guo)completive aspect),...

V_{tel} ----> qǐng (invite), jiào (ask),...

V_{quo} ----> shuō (say),...

V_{p} ----> yǒu (possess, have),...

V_{c} ----> rènshi (know), rènde (recognize), xiǎode (realize), jìde (remember),...

V_{do} ----> gěi (give), sònggěi (give as a gift), gàosong (tell), jiào (call),...

V_{mo} ----> shàng (ascend), xià (descend), jìn (enter), chū (exit), huí (return), guò (cross), qǐ (arise),...

DIR ----> lai (towards), qu (away)

V_{m} ----> xiǎng (think of), ài (love), hèn (hate),...

V_{tc} ----> shao-lái (cook), mán-guò (deceive), zhǐ-zhù (stop), gài-zhù (cover), zhuā-zhù (seize), rěn-zhù (restrain), liú-zhù (hold), dé-dào (get), xiǎng-dào (think of), zhǎo-zháo (found), quàn-

zhù (persuade), cāi-tǒu (guess), zhēng-tuō (struggle to escape), xiǎng-chuān (think of), zuò-diào (finish off), jué-dìng (determine), dài-shàng (put on), guān-shàng (close),...

V_{tp} ----→ kàn-jian (see), tīng-jian (hear), yù-jian (meet),...

V_{in} ----→ sǐ (die), xǐng (awake), yǎ (dumb), può (break), dǎo (fall), chéng (succeed), bài (fail), shū (lose), yíng (gain), bìng (sick), zhǒng (swell up),...

V_{ia} ----→ fēi (fly), pǎo (run), zǒu (walk), tiào (jump), pá (crawl), zuò (sit), lái (come), qù (go), zhàn (stand), kū (weep), xiào (laugh), hǎn (cry), jiào (call),..

Cl_v ----→ cì, huí, tǎng,...

V_{taa} ----→ dǎ (hit), mà (scold), shā (kill), qiāo (knock), tuī (push), kǎn (chop), lòng (do), guān (close), tà (stomp), kāi (open), zuò (make), chī (eat), hē (drink), zhēng (steam), kàn (look at), niàn (recite), xiě (write), huà (draw), tīng (listen to), suàn (calculate), jiào (teach), xǐ (wash), chuī (blow), tōu (steal), jiěshi (explain), xia (frighten),...

V_{tab} ----→ gōng (attack), tūn (swallow), pèi (match), shuō (speak), cāi (guess),...

V_{tam} ----→ tiāo (carry on the shoulder), bān (move), fú (uphold), ná (carry, hold), fàng (put),...

N_{pr} ----→ Shǐ Měi, Zhèng Zhǐ-yīng,...

PP ----→ wǒ (I), nǐ (you), tā (he)

N_h ----→ rén (people), xiānsheng (teacher), xuésheng (student), māma (mother), háizi (child), mèimei (younger sister), péngyou (friend), jiǎofu (porter),...

N_{nh} ----→ māo (cat), gǒu (dog), shū (book), huà (picture), yǐzi (chain), chē (car), jiā (home), xuéxiào (school), wūzi (house), dōngxi (thing), fàn (rice), chá (tea), mén (door), yīfú (clothes), hóulong (throat), yǎnjing (eye),...

D ----→ zhè (this), nà (that)

Num ----→ yī (one), èr (two), sān (three),...

Cl ----→ ge, bǎ, zhāng, zhī, liǎng, shuǒ, běn, fū, jiàn,...

IV. Transformations

The main body of the transformations falls into four parts:

embedding transformations, preliminary simple transformations, conjoining transformations, and final simple transformations and morphophonemics, in that order.[9] Pre-sentences generated from the first three transformational components may cycle back to the first component and be exposed to the same sets of transformational rules. It is so contrived that the results of the conjoining transformations do not pass on to the preliminary simple transformations. All pre-sentences will be changed by the last component into sentences.

A few problems arise in connection with the ordering of rules and where they belong. These will be discussed in relation to individual rules. As it now stands, the transformational component consists of five embedding generalized transformational rules, eleven preliminary simple transformational rules, two conjoining tranformational rules, four final simple transformational rules, and five morphophonemic rules.

All rules will be illustrated with examples; literal translation or free translation (in quotation marks) into English will be given in the footnotes of the page in which the individual example appears. Late alphabetic symbols stand for nonpertinent elements or zero.

IV.1. Embedding transformations

MOD

ETR1. Given a pre-sentence of the form

X NP Y

1 2 3

apply the rule

MOD ----→ 1 3 de

in the matrix string

X' + NP' + MOD + Y'

where: (1) NP = NP'

(2) X ≠ Nom

(3) X does not end with BA or BEI

(4) Y does not end with F, or contain lǐ without V_{loc}

(5) Y does not begin with MOD.

This rule does not apply to strings of alternative questions.

tā yǒu hóulong[a]
*hóulong MOD yǎ le[b] } ---> hóulong tā yǒu de yǎ le (7a, 10)[c]

Given two terminal strings, one of them may be transformed into a modifying clause by use of the particle de and be embedded into the other, if they satisfy the conditions stated above. Resultant strings generated from this rule undergo an obligatory permutation rule (PTR7a) in order to place the modifying clause in the right position. Those which contain the possessive verb V_p have to undergo another obligatory simple transformational rule to form the possessive (PTR10).

Restrictions (2) and (3) will prevent the generation of such ungrammatical sentences as:

(3) *shū ná -le de xuésheng pǎo le
from (4) shū xuésheng ná -le
and (5) xuésheng pǎo le;
(6) *tā bǎ mán-guò de māma kū le
from (7) tā bǎ māma mán-guò
and (8) māma kū le;
(9) *fàn gěi chī wán de meimei bǎo le
from (10) fàn gěi meimei chī wán
and (11) meimei bǎo le.

Restriction (4) prevents the following types of ungrammatical sentences:

---

[a] 'he has throat'.
[b] *throat MOD sore F.
[c] *throat he have de sore F.
(3) *book take ASP de he run F.
(4) 'the books are taken by him'.
(5) 'he ran away'.
(6) *he bǎ deceive de mother cry F.
(7) 'he deceived mother'.
(8) 'mother cried'.
(9) *rice gěi eat finish de sister full F.
(10) 'the rice is eaten up by sister'.
(11) 'sister is full'.

(12) *ta zài lǐ de xuéxiào hěn dà

from (13) ta zài xuéxiào lǐ

and (14) xuéxiào hěn dà;

(15) *ta mǎi -le hěn hǎo ma de shu

from (16) shu hěn hǎo ma

and (17) ta mǎi -le shu

Strings of alternative questions are excluded from this transformation for two reasons: firstly, to exclude ungrammatical sentences like:

(18) *hǎo bù hǎo de háizi lái le

from (19) háizi hǎo bù hǎo

and (20) háizi lái le

(21) *ta kàn de jian pàng de háizi kàn bú jian háizi

from (22) háizi pàng

and (23) ta kàn de jian háizi kàn bú jian háizi

Secondly, to prevent unnecessary designation of ambiguity to such strings as

(24) hǎo de xuésheng lái bù lái

which otherwise may have two sources: that is, the underlying strings are either:

(25) hǎo de xuésheng lái

and (26) hǎo de xuésheng bù lái

---

(12) *he locate in de school very big.

(13) 'he was in school'.

(14) 'the school is very big'.

(15) *he buy ASP very good F de book.

(16) 'the book is very good'.

(17) 'he bought books'.

(18) *good not good de child come F.

(19) 'is child good or not'.

(20) 'child comes'.

(21) *he see can plump de child see not can child.

(22) 'the child is plump'.

(23) 'can he see the child or not'.

(24) 'are the good students coming or not'.

(25) 'good students come'.

(26) 'good students are not coming'.

or:

(27) xuésheng hǎo

and (28) xuésheng lái bù lái

(as otherwise would be generated by this rule.)

This rule may be considered as the expansion of T_{NOM} in SRM which deals with the modification of pre-verbal Noms only.

Starred strings are pre-sentences, or terminal strings not yet transformed into their final grammatical shape. Bracketed numbers indicate certain transformational rules obligatory for the preceding string. Thus, the terminal string from the given example has to undergo rules 7a and 10 before it is transformed into a sentence.

Directional

ETR2. Given a pre-sentence of the form

$$\underset{1}{\text{Nom}} \quad \underbrace{V_{mo} + \text{DIR}}_{2}$$

apply the rule

C ----→ 2

in the matrix string

$$\text{Nom}' + X + C \left\{ \begin{matrix} \{V_{tab} \\ V_{tam}\} \\ V_{ia} \end{matrix} \quad \text{Nom}'' \right\} \quad Y$$

where: (1) Nom = Nom' if the matrix string contains V_{ia}; otherwise

(2) Nom = Nom" where Nom" is not contained in another Nom

(3) Y does not contain R_v

*tā BU -le C ná shū[a]
shū chū lai[b] ---→ *tā BU -le chū lai ná shū (7b, 22b, 24) [c]

---

(27) 'students are good'.

(28) 'are the students coming or not'.

[a] *he not ASP C carry book.

[b] 'the book comes out'.

[c] *he will not ASP out DIR carry book.

This rule will generate some of the resultative verbs with the so-called directional complement. The components of such verbs eventually come from two underlying strings. Resultative verbs cannot be reduplicated; hence restriction (3) has to be imposed.

With most of the resultative verbs, the aspect markers will follow the compounded verbs, but when a V_{ia} concatenates with a V_{mo}, the aspect marker will follow the first member (cf. FTR22a).

The tone of the directional complement may be modified or neutralized. However, tonal modification is not dealt with in this paper.

One argument against the generation of this kind of resultative verbs by the present rule (that is, by an embedding transformation from two underlying strings), lies in the fact that sometimes one of these source sentences is semantically odd in a way that the output sentence is not. For example, shū chū lai and fàn xià qu[a] are semantically unacceptable. However, such strings may be accepted as grammatical in the syntactic structure of the language. The oddness will then be accounted for in the semantic component. The output string does not carry the same kind of semantic oddness as does the underlying string, because the preverbal Nom in the underlying string becomes postverbal in the output string.

Moreover, there is a stronger reason for rejecting the alternative solution of generating such resultative verbs within the constituent structure. The following CS rule may be posited for such a solution:

$$C \dashrightarrow V_{mo} + DIR \quad \text{if} \quad \text{——} \left\{ \begin{matrix} V_{tab} \\ V_{tam} \\ V_{ia} \end{matrix} \right\}$$

When C is followed by V_{tab} or V_{tam} or V_{ia}, it may be developed into a directional phrase consisting of the motion verb and directional markers. The important point is that the context does not always determine the application of this rule. In other words, this rule must be optional. For C co-occuring with V_{tam} may also be derived from another string by the Resultative Transformations (ETR3, 4).

---

[a] 'the rice goes down'.

Since it is more undesirable to set up optional CS rules, the present solution is adopted.

Resultant strings from this and the following rules have to undergo an obligatory permutation rule to transfer the complement to a postverbal position (cf. PTR7b).

Resultative I

ETR3a. Given a pre-sentence of the form

$$\underset{1}{\text{Nom}} \qquad \underset{2}{\left\{\begin{matrix} V_{intr} \\ ADJ \end{matrix}\right\}}$$

apply the rule

C ---> 2

in the matrix string

Nom' + X' + C + V_{ta} + Nom" + Y'

where: (1) Nom = Nom"

(2) Y' does not contain R_v

*tā C xǐ yīfú le[a] / yīfú gānjing[b] ---> *tā gānjing xǐ yīfú le (7b)[c]

ETR3b. Given a pre-sentence of the form

$$\underset{1}{\left\{\begin{matrix} NP\ \ NP'\ \ V_p\ \ de \\ NP'\ \ \ \ de\ \ NP \end{matrix}\right\}} \qquad \underset{2}{\left\{\begin{matrix} V_{intr} \\ ADJ \end{matrix}\right\}}$$

apply the rules

C ---> 2

Y' ---> 1 + Y'

in the matrix string

X' + NP" + C + V_{ia} + Y'

where: (1) NP' = NP"

(2) Y does not contain R_v

---

[a] *he C wash clothes F.

[b] 'the clothes are clean'.

[c] *he clean wash clothes F.

*tā -le C kū[a]
tā de yǎnjing zhǒng[b]
---→ *tā -le zhǒng kū tā de yǎnjing (7b, 21, 22b)[c]

Some of the verbs with resultative complements are generated by this rule, with the condition that the object of one string is identical with the subject of the other string (3a), or the subject of one string is part of the subject of the other string (3b).

This and the following transformation may be considered as conjoining transformations, since the resultative verb thus generated is the combination of two verbs from two underlying strings. However, the resultant combination behaves more like the first member of the combination; that is, the resultative verb has the properties of its first component in general. For example, V_{ta} and ADJ may be followed by aspect markers. The resultative verb may also have properties not shared by either of its components. For example, V_{ia} + ADJ may be followed by a Nom.

All the resultative verbs generated by this rule may have the BA and the BEI transformations (PTR8, 9). In addition, if the Nom's in the resultant string are identical, the latter will have the reflexive transformation (FTR21).

Resultative II

ETR4. Given a pre-sentence of the form

$$\underset{1}{\text{Nom}} \qquad \underset{2}{\left\{\begin{matrix} V_{intr} \\ ADJ \end{matrix}\right\}}$$

apply the rule

C ---→ 2

in the matrix string

$$\text{Nom}' + X + C \qquad \left\{\begin{matrix} V_{ta} \\ V_{intr} \\ ADJ \end{matrix}\right\} \qquad (\text{Nom}'') \qquad Y$$

---

[a] *he ASP C weep.

[b] 'his eyes are swollen'.

[c] *he ASP swollen weep he de eye.

where: (1) Nom' = Nom ≠ Nom"

(2) Y does not contain R_v or any verb

Note: "any verb" means any of the following:

Shì, V_{qua}, ADJ, V_{qub}, V_{tel}, V_{quo}, V_p, V_c, V_{do}, V_{mo}, V_m, V_{tp}, V_{taa}, V_{tab}, V_{tam}, V_{in}, V_{ia}.

*tā de C chī fàn[a] / tā bǎo[b] ----→ *tā de bǎo chī fàn (7b, 20a)[c]

Other verbs with resultative complements are generated by this rule. The subjects of the two underlying strings must be identical. Strings generated from this rule may not undergo the BEI transformation. A problem arises in connection with the ordering of rules and the relation of the BA and BEI transformations to this and the preceding transformations. That is, the resultative verbs generated by rules 3 and 4 have exactly the same structure, once the transformational histories are wiped out, so that it is difficult to formulate conditions for the BA and the BEI rules which will include resultative verbs from rule 3 but exclude those from rule 4. There are three possible solutions: one is to insert the BA and the BEI transformations between these two rules; another is to assign derived tree structures to the transformed strings from rules 3 and 4 in such a way that the resultative verbs generated from the two rules will have different labels for reference in the BA and the BEI transformations; still another is to state this restriction in the BA and the BEI transformational rules themselves. The last alternative is adopted in this paper, since the inclusion of two simple transformational rules (BA and BEI transformations) among embedding transformations brings about not only inelegance, but also confusion, in the concept of the whole transformational component structure. Until further research is done on the necessity of setting up derived tree structures for transformed strings, it would be undesirable to

---

[a] *he can C eat rice.

[b] 'he is full'.

[c] *he can full eat rice.

assign arbitrarily created labels to the two types of resultative verbs, which otherwise share many common properties.

Complement

ETR5a. Given a pre-sentence of the form

$\underset{1}{\text{Nom}}$ $\underset{2}{\text{X}}$

apply the rule

C ---→ 2

in the matrix string

$X' + V_{tel} + Nom' + C + Y'$

where: (1) Nom = Nom'

(2) X contains $\{V_{tel}, V_{quo}, V_{do}, V_{mo}, V_{tr}, V_{intr}, V_{m}\}$

(3) X does not contain de + C, or EMP

*tā qǐng wǒ C[a]
wǒ chī fàn[b] } ---→ tā qǐng wǒ chī fàn[c]

There are certain restrictions with regard to the type of sentences which can be the complement of V_{tel}. Sentences with the stative verbal alone do not serve as complement. For example,

(29) *tā qǐng wǒ shì xuésheng

(30) *tā qǐng wǒ měilì

(31) *tā qǐng wǒ zài jiā lǐ

are ungrammatical; but

(32) tā qǐng wǒ zài jiā lǐ chī fàn

is grammatical.

This rule is a modification of T_{tel} in SRM.

---

[a] *he invites I C.

[b] 'I eat rice'.

[c] *he invite I eat rice.

(29) *he invite I be student.

(30) *he invite I beautiful.

(31) *he invite I locate home in.

(32) 'he asks me to eat at home'.

ETR5b. Given a pre-sentence of the form

S

apply the rule

C ----→ S

in the matrix string

X + V_{quo} + C + Y

*tā shuo C[a]
nǐ zài jiā lǐ[b]
} ---→ tā shuō nǐ zài jiā lǐ[c]

Any type of sentence may be the complement of a quotative verb.

ETR5c. Given a pre-sentence of the form

S

apply the rule

C ----→ S

in the matrix string

X + de + C + Y

where S does not contain shi and does not end with F

*tā de + C dǎ nǐ[d]
tā kū le[e]
} ---→ *tā de tā kū le dǎ nǐ (6, 13)[f]

The de-complement may derive from any kind of sentence except the copular type. The resultant strings have to go through a certain number of obligatory transformations. For example, if the subjective Nom of the embedded string is identical with either the subject or object of the embedding string, it has to be deleted. (PTR14a).

---

[a] *he say C.

[b] 'you are at home'.

[c] 'he said you were home'.

[d] *he de + C hit you.

[e] 'she cried'.

[f] *he de she cry F hit you.

IV.2 Preliminary Simple Transformations

The results of the embedding transformations pass to this component which consists of ten simple transformational rules, producing pre-sentences which are available for embedding transformations again. All obligatory rules are starred.

de + C

*PTR6.

$$\frac{X}{1}\quad\frac{de + C}{2}\quad\frac{V\ (Nom)\ (FP)}{3}\quad\frac{(F)}{4}\ \Longrightarrow\quad 1\ 3\ 2\ 4$$

where V = any verb

*tā de ta kū le dǎ nǐ ⟹ *tā dǎ nǐ de tā kū le (14)[a]

This rule is obligatory for all strings with de and a following complement sentence. This de-complement is switched to the position after the verb or after V + Nom or FP. Resultant strings with transitive verbs may undergo an obligatory transformation (PTR13) or optional transformations (PTR8, 9, 11); otherwise all strings generated are subject to rule 14.

Permutation

*PTR7a.

$$\frac{X}{1}\quad\frac{(DET)}{2}\quad\frac{\begin{Bmatrix}N_{pr}\\N\end{Bmatrix}}{3}\quad\frac{MOD}{4}\quad\frac{Y}{5}\ \Longrightarrow\ 1\ \begin{Bmatrix}(2) & 4\\ 4 & (2)\end{Bmatrix}\ 3\ 5$$

*hóulong tā yǒu de yǎ le ⟹ *tā yǒu de hóulong yǎ le (10)[b]

Post-nominal modifiers in strings generated from ETR1 are transformed into pre-nominal modifiers by this rule. They are placed either before or after the determiners if the latter are also in the string.

This kind of de-modifier, when placed after the determiners, is purely descriptive in character; however, if it is placed before the determiners, it is not only descriptive but also definite. Nèi ge gěi wǒ dōngxi de háizi refers to 'that child, who (happens to) give me things'; but gěi wǒ dōngxi de nèi ge gáizi specifically refers to 'that

---

[a] *he hit you de she cry F.

[b] *he have de throat sore F.

child who gives me things', in contrast to some other children who ask me questions, for example.[10]

The semantic difference involved in connection with the position of the de-modifiers with regard to the determiners may suggest an alternative treatment of considering one type as derived from the other. In other words, strings with de-modifiers preceding the determiners may be considered to be derived from those with de-modifiers following the determiners, by means of a permutation rule. This would imply the interpretation of the former kind as variant forms derived from the latter.

For this treatment of the problem, the following constituent structure rule might be devised, in order to have the MOD formative placed after DET.

$$\text{Nom} \longrightarrow (\text{DET})\ (\text{MOD}) \begin{Bmatrix} N_{pr} \\ \\ N \end{Bmatrix}$$

An alternative rule might be:

$$\text{Nom} \longrightarrow \begin{Bmatrix} (\text{DET})\ \ MN \\ \\ NP \end{Bmatrix}$$

where MN = modified nominal formative.

The MOD rule would then be reformulated as follows:

$$\text{Let Nm} = \begin{Bmatrix} N_{pr} \\ \\ N \end{Bmatrix}$$

Given a pre-sentence of the form

$$\frac{X}{1}\ \frac{Nm}{2}\ \frac{Y}{3}$$

apply the rule

MOD ----→ 1 3 de

in the matrix string

X' + MOD + Nm' + Y'

where (1) Nm = Nm'

(2) X does not contain DET,

OR Given a pre-sentence of the form

$\frac{X}{1}\ \frac{NP}{2}\ \frac{Y}{3}$

apply the rule

MN ----→ 1 3 de 2

in the matrix string

X' + MN + Y'

where X does not contain DET,

if the alternative rule in the constituent structure were chosen.

The permutation rule would be:

$\frac{X}{1}\ \frac{DET}{2}\ \frac{Y + de}{3}\ \frac{Z}{4}$ ====> 1 3 2 4

in either case.

The treatment above has been rejected for two reasons. Firstly, the implication of deriving one type of modified string from another is unnecessary, and in fact, may not be justified. Secondly, the MOD rule has to be formulated with more restrictions in order to assure that DET is not repeated. With the second alternative, the building in of DET in front of a formative symbol (i.e. MN) in the constituent structure seems arbitrary and unsatisfactory.

*PTR7b. $\frac{X}{1}\ \frac{C}{2}\ \frac{V}{3}\ \frac{Y}{4}$ ====> 1 3 2 4

where V = any verb

*tā BU -le chū lai ná shū ====> *tā BU -le ná chū lai shū (22b, 24)[a]

*tā gānjing xǐ yīfú le ====> tā xǐ gānjing yīfú le[b]

*tā de bǎo chī fàn ====> *tā de chī bǎo fàn (20a)[c]

Preverbal complement elements in strings generated from ETR2, 3, and 4 are transferred to a postverbal position by this rule.

---

[a] *he not ASP take out DIR book.

[b] 'he washed the clothes clean'.

[c] *he can eat full rice.

BA

PTR8. $\underset{1}{\text{Nom + X}}\ \underset{2}{\text{(ASP) Y}}\ \underset{3}{\text{Nom'}}\ \underset{4}{\text{Z (F)}}$ ====> 1 BA 3 2 4

where: (1) X may not contain de if Y contains a simple verb

(2) Y begins with $\{ V_{ia}, V_{ta}, V_{tc}, V_{do} + \text{Nom}, V_{m} \}$

(3) 2 does not contain a simple V (except V_{do}) alone or Z is not zero.

Note: "simple verb" means any of the verbs cited in rule ETR4 above, except V_{tc} and V_{tp}.

*tā -le chī fàn le[a] ====> *tā BA fàn -le chī le (22b, 25, 27)[b]

The BA-transformation switches the object to the position before the verb, by means of the use of BA to give definite reference to the object. The rule for this transformation involves two changes: it switches the object to a position immediately after the subject and before the verb, and introduces BA into the transformed string. BA will be replaced by terminal symbols in a morphophonemic rule later (MR25).

In SRM, the T_{BA} merely switches the position of the BA, since the latter is already introduced in the constituent structure.

There are some restrictions on the input strings of the BA-transformation. In general, a terminal string may have the BA-transformation only if its verbal is modified by certain kinds of modifiers. Restriction (1) states the nonco-occurrence of the potential marker de with BA, provided that the verb modified by de is a simple verb (i.e. non-compound or non-resultative). That is, a string with a simple verb in the potential mode may not have the BA-transformation, for strings like *tā bǎ fàn chī de[c] are ungrammatical.

Restriction (2) limits the kinds of verbs which may have the BA-transformation. It is obvious that not every type of transitive verb is eligible, while V_{ia}, after forming resultative verbs followed by a Nom, may have this transformation.

---

[a] *he ASP eat rice F.

[b] *he BA rice ASP eat F.

[c] *he bǎ rice eat can.

Restriction (3) gives further conditions as to how the verbal must be modified. For example, either the verb must be preceded by aspect markers, or it must be a compound verb or resu ative verb, or the objective Nom must be followed by a frequency phrase or a de-complement, etc. This will exclude ungrammatical strings like *tā bǎ hàizi mà.[a]

BEI

PTR9. $\underset{1}{\text{Nom}}\ \underset{2}{X}\ \underset{3}{(\text{ASP})\begin{Bmatrix} V_{tr} \\ V_{ia} \end{Bmatrix}(V)\ (\text{DIR})}\ \underset{4}{\text{Nom}'}\ \underset{5}{Y} \Longrightarrow 4\ 2\ \text{BEI}\ (1)\ 3\ 5$

where: (1) V = any verb

(2) X does not contain de

(3) Y does not contain Nom

This rule does not apply to strings generated from ETR4.

tā xǐ gānjing yīfú le ⟹ *yīfú BEI (tā) xǐ gānjing le (25)[b]

BEI is the formative for overt passive markers. It will be replaced by terminal symbols in MR25. According to this rule, the postverbal Nom in the input string becomes the preverbal Nom in the output string, and the underlying preverbal Nom becomes optional. This transformation applies to strings with transitive verbs or resultative verbs generated from ETR3, but not from ETR4.

The passive formative is introduced by this transformation, while in SRM it is introduced in the constituent structure. T_{BEI} is simply a juxtaposition rule.

Possessive

*PTR10. $\underset{1}{X}\ \underset{2}{V_p}\ \underset{3}{\text{de} + Y} \Longrightarrow 1\ 3$

where X does not contain ASP

*tā yǒu de hóulong yǎ le ⟹ tā de hóulong yǎ le[c]

This rule applies exclusively to strings with possessive verbs generated from ETR1. Obligatory deletion of the possessive verb (V_p) after it is turned into a modifier transforms the modifying marker de into a possessive marker.

---

[a] *he bǎ child scold.

[b] *clothes BEI (he) wash clean F.

[c] 'his throat is sore'.

Ellipsis

PTR11. $\frac{X + V}{1}\ \frac{Nom}{2}\ \frac{Y}{3}$ ====> 1 3

where V = any verb except V_{quo}

This rule is nonrecursive if V = V_{do}.

tā xǐ gānjing yīfú le ====> tā xǐ gānjing le[a]

This is an optional rule for deleting a postverbal Nom. Since it is a recursive rule, except where it contains V_{do}, a terminal string like tā qǐng chī may be generated from a source string like tā qǐng wǒ chī fàn by applying this rule twice.

Reduplicative Verb

PTR12. $\frac{X + V}{1}\ \frac{(Nom)}{2}\ \frac{Num}{3}\ \frac{R_v}{4}\ \frac{Y}{5}$ ====> 1 4 2 5

where: (1) X does not contain ASP

(2) V = any verb

*tā kàn tā yī R_v [b] ====> *tā kàn R_v tā (23)[c]

Because ofthe co-occurrence restriction put forth in the constituent structure (CS8), this rule only applies to V_{ta} or V_{ia} when followed by the reduplicative formative and not preceded by aspect markers. It deletes Num and switches R_v before the postverbal Nom if there is any. The formative R_v will be replaced by terminal symbols in MR23.

Reduplication

*PTR13. $\frac{X + V + Nom\ (FP)}{1}\ \frac{de + S + Y}{2}$ ====> 1 R_v 2

*tā dǎ nǐ de tā kū le ====> *tā dǎ nǐ R_v de tā kū le (23)[d]

Transitive verbs with objects, followed by a descriptive complement, have to be reduplicated. The reduplicative formative introduced in this rule will be taken care of in a morphophonemic rule (MR23).

---

[a] 'he washed (it) clean'.

[b] *he look she one R_v.

[c] *he look R_v she.

[d] *he hit you R_v de she cry F.

Deletion

*PTR14a. $\underset{1}{X + Nom + Y + de} \quad \underset{2}{Nom'} \quad \underset{3}{Z} \quad \Longrightarrow \quad 1\ 3$

where Nom = Nom'

*tā hǎo de tā hěn hǎo[a] ⟹ *tā hǎo de hěn hǎo (14b)[b]

This rule deals mainly with strings generated from ETR5c. Nom in the de-complement is obligatorily deleted if it is identical with any preceding Nom.

PTR14b. $\underset{1}{X + ADJ + de + EMP} \quad \underset{2}{ADJ} \quad \underset{3}{Y} \quad \Longrightarrow \quad 1\ 3$

*tā hǎo de hěn hǎo ⟹ tā hǎo de hěn[c]

This is an obligatory rule for ADJ when the de-complement also contains an ADJ. At first sight, strings like tā hǎo de hěn seem to derive from tā hěn hǎo. However, this is inconsistent with the treatment of the de-complement in general, and hence the present solution is adopted.

DIR

PTR15a. $\underset{1}{X} \quad \underset{2}{DIR} \quad \underset{3}{Nom} \quad \underset{4}{Y} \quad \Longrightarrow \quad 1\ 3\ 2\ 4$

*tā BU -le ná chū lai shū ⟹ *tā Bu -le ná chū shū lai (22b, 24)[d]

This rule applies optionally to strings generated from ETR2. DIR may be switched to a position after the objective Nom.

PTR15b. $\underset{1}{X + V_{tam}} \quad \underset{2}{V_{mo} + DIR} \quad \underset{3}{Nom} \quad \underset{4}{Y} \quad \Longrightarrow \quad 1\ 3\ 2\ 4$

*tā BU -le ná chū lai shū ⟹ *tā BU -le ná shū chū lai (22b, 24)[e]

This is an optional rule for resultative verbs with a directional complement whose first member is V_{tam}, as generated from ETR2. The directional complement may be switched to a position after the objective Nom.

---

[a] *he good de he very good.

[b] *he good de very good.

[c] 'he is very good'.

[d] * he not ASP carry out book DIR.

[e] *he not ASP take book out DIR = 'he has not taken out a book'.

Transposition

PTR16.

$$\underset{1}{\text{Nom}} \quad \underset{2}{X \quad \left\{ \begin{matrix} V_{do} + \text{Nom}' \\ \left(\begin{matrix} V_{tr} \\ V_{ia} \end{matrix} \right) (V) \end{matrix} \right\}} \quad \underset{3}{\text{Nom}''} \quad \underset{4}{Y} \quad \dashrightarrow \left\{ \begin{matrix} 3 & 1 \\ 1 & 3 \end{matrix} \right\} 2 \quad 4$$

where Y does not contain R_v or de

tā xǐ gānjing yīfú le ====> yīfú tā xǐ gānjing le[a]

OR tā yīfú xǐ gānjing le[b]

The normal word order in Chinese is subject-verb-object. If the object occurs before the subject, the inversion of order involves stylistic difference: emphasis is focused on the object.

IV.3 Conjoining Transformations

The results of the conjoining transformations do not pass on directly to the component of preliminary simple transformations; however, conjoined strings may cycle back to the first transformational component and be available for the embedding transformations.

Motion

CTR17.

$$\left. \begin{matrix} \underset{1}{\text{Nom} + X + V_{tam} + \text{Nom}' + Y} \\ \underset{2}{\text{Nom}''} \quad \underset{3}{X' + V_{mo} + Y'} \end{matrix} \right\} \dashrightarrow 1 \quad 3$$

where: (1) Nom = Nom'

(2) Y does not contain F

*tā -le ná shū

*tā -le chū mén lai le[c] } ====> *tā -le ná shū -le chū mén lai le (22b)[d]

---

[a] 'the clothes are washed clean by him'.

[b] 'he washed the clothes clean'.

[c] *he ASP exit door DIR F.

[d] *he ASP take book ASP exit door DIR F.

Conjoining transformations are not studied in this paper. The above rule is an example of conjoining by pure concatenation, without the introduction of any connector. It may be expanded to include some other kinds of verbs that can occur in such types of conjoining. The point of interest here is that it may yield a string identical in form with a string resulting from ETR2. For example, tā ná shū chū lai[a] is ambiguous: it may be generated by ETR2 with a subsequent DIR-transformation (PTR15b), or by the present rule.

Alternative Question

CTR18. $\left.\begin{matrix} \frac{X + VB}{1} \\ \frac{X}{2}\ \frac{BU + VB\ (F)}{3} \end{matrix}\right\} \Longrightarrow 1\ 3$

where VB = any kind of verbal

$\left.\begin{matrix} \text{tā ná shū chū mén lai}^{b} \\ \text{*tā BU ná shū chū mén lai}^{c} \end{matrix}\right\} \Longrightarrow$ *tā ná shū chū mén lai BU ná shū chū mén lai (26)[d]

Alternative questions are formed by combining a positive and a negative string which have identical VB's. Except for strings with the potential marker de, a later optional deletion rule (FTR19) may apply to these resultant strings, eliminating part of the underlying positive VB. Alternative questions in the potential mode, that is having potential markers, are different: both the positive and the negative components stand.

There are certain restrictions for alternative questions and the final particles they can co-occur with. For example, they do not take the final particle ma. However, such considerations have not been taken into account, for such restrictions have not yet been thoroughly studied.

---

[a] 'he carries the book and comes out' or 'he takes out a book'.

[b] 'he carries the book and comes out'.

[c] *he not carry book exit door DIR.

[d] *he carry book exit door DIR not carry book exit door DIR.

Further specification of the rule may provide for the condition of transforming any final particle into the ones allowed.

The present rule is of a wider scope than T_{Qbu} in SRM, which deals with adjectives only.

IV.4 Final Simple Transformations and Morphophonemic Rules

The rules in this final section of the transformational component will apply to all the strings generated so far. They are mostly obligatory; optional rules are chiefly concerned with stylistics. Only one rule of the latter kind is included. After the application of these rules, all pre-sentences are transformed into sentences.

Final Simple Transformational Rules

Deletion

FTR19. $\frac{X}{1}\ \frac{VB}{2}\ \frac{BU + Y}{3}$ ====> 1 *VB 3

where: (1) *VB = the left-most constituent of VB

(2) X does not contain de

*tā ná shū chū mén lai BU ná shū chū mén lai ====>

*tā ná BU ná shū chū mén lai (26)[a]

Strings from CTR17 which do not contain the potential marker de may undergo this rule. In alternative questions, all elements except the leftmost constituent of the positive VB may be deleted. The leftmost constituent in such a case may be a verb or BA. The resultant string of this rule is considered a more common stylistic variant than that of CTR17.

Potential

*FTR20a. $\frac{X}{1}\ \frac{de}{2}\ \underbrace{\left\{\begin{matrix} V \\ V+V' \\ v-v' \end{matrix}\right\}}_{3}\ \underbrace{Y}_{4}$ ====> 1 3 2 4

where (1) V = any verb

(2) v = member of a compound verb

---

[a] *he carry not carry book exit door DIR.

Note: "compound verb" refers to V_{tc} or V_{tp}

*tā de chī bǎo fàn ⟹ tā chī de bǎo fàn[a]

Strings with the potential marker de in the positive form have to go through this rule, to have de switched to the position after the verb if the latter is a simple verb, or to the position between two verbs or two members of a compound verb. (Compound verbs are given in hyphenated form in the lexicon.) It can thus be observed that the potential marker behaves differently in accordance with verbs of different structure.

*FTR20b.

$$\underset{1}{X}\ \underset{2}{BU}\ \underset{3}{de}\ \underset{4}{\left[\begin{matrix} V \\ \{V + V'\} \\ \{v - v'\} \end{matrix}\right]}\ \underset{5}{Y} \Longrightarrow \begin{bmatrix} 1 & 4 & 2 & 3 & 5 \\ 1 & 4 & 2 & 5 & \end{bmatrix}$$

Conditions same as for *FTR20a.

*tā BU de chī bǎo fàn[b] ⟹ *tā chī BU bǎo fàn (2b)[c]

Strings with de in the negative form have to undergo this rule. De is deleted if the string contains a complex or compound verb. In addition, the negative marker is switched to a position after a simple verb, or after the first member of a complex or compound verb.

Reflexive

*FTR21. $\underset{1}{Nom + X}\ \underset{2}{Nom'}\ \underset{3}{Y} \Longrightarrow 1\ ziyǐ\ 3$

where Nom = Nom'

This rule is optional if Nom = tā

*nǐ xià sǐ nǐ[d] ⟹ nǐ xià sǐ zìjǐ[e]

When two identical Nom's occur in the same string, the second one is obligatorily transformed into a reflexive pronoun, unless it is the pronoun of the third person. For in the latter case, there is always ambiguity involved as to whether the pronoun actually refers to the

---

a 'he can eat until he is full'.

b *he BU de eat full rice.

c *he eat BU full rice.

d *you frighten die you.

e 'you frighten yourself to death'.

same person.

Aspect

*FTR22a. $\underset{1}{X}\ \underset{2}{ASP}\ \underset{3}{V_{ia}}\ \underset{4}{V_{mo} + Y}$ ⟹ 1 3 2 4

where Y does not contain Nom_{loc}

*tā -le pǎo shàng qu[a] ⟹ tā pǎo -le shàng qu[b]

Aspect markers are switched to a position between two successive verbs only if the preceding verb is a V_{ia} and the following one is a V_{mo}, with the condition that they are not followed by Nom_{loc}.

*FTR22b. $\underset{1}{X}\ \underset{2}{ASP}\ \underset{3}{V\ (V')\ (DIR)}\ \underset{4}{Y}$ ⟹ 1 3 2 4

where V = any verb

*tā BA fàn -le chī le ⟹ *tā BA fàn chī -le le (25, 27)[c]

*tā -le ná shū -le chū mén lai le ⟹ *tā ná -le shū chū -le mén lai le[d]

*tā BU -le ná chū lai shū ⟹ *tā BU ná chū lai -le shū (24)[e]

All aspect markers are switched to the position after a verb or a group of successive verbs, or after a directional marker, if the latter is preceded by a verb or verbs.

---

[a] *he ASP run up DIR.

[b] 'he ran up there'.

[c] *he BA rice eat ASP F.

[d] 'he carried the book and came out of door'.

[e] *he BU carry out DIR ASP book.

Morphophonemic Rules

R_v

*MR23.

$$\frac{X + V\ (Nom)(\left\{\begin{matrix}FP\\Num\end{matrix}\right\})}{1} \quad \frac{R_v}{2} \quad \frac{Y}{3} \Longrightarrow 1\ V\ 3$$

where: (1) V on the left side of the arrow = any verb
(2) V on the right side of the arrow = verb identical with the verb on the left side of the arrow

*tā kàn R_v tā ⟹ tā kàn kàn tā[a]

*tā dǎ nǐ R_v de tā kū le ⟹ tā dǎ nǐ dǎ de tā kū le[b]

This rule projects the formative R_v into its morphophonemic form. R_v is configurated as the reduplication of the immediately preceding verb. In the case of reduplicative verbs where R_v immediately follows the verb as generated by PTR12, there is neutralization of tone in the reduplication. For example, kàn kàn becomes kàn kan. However, this phenomenon has not been formulated into a rule, since tone sandhi is not dealt with in this paper.

Mei

*MR24.

$$\frac{X\ BU\ Y}{1\ 2\ 3} \quad \left[\begin{matrix}-le\\-guo\end{matrix}\right]_{4} \quad \frac{Z}{5} \Longrightarrow 1\ méi\ 3\ \left[\begin{matrix}\emptyset\\-guo\end{matrix}\right]\ 5$$

*tā BU ná chū lai -le shū ⟹ tā méi ná chū lai shū[c]

The negative marker BU becomes méi if aspect markers follow, unless it is preceded by modal auxiliaries. However, méi is only compatible with the completive aspect; therefore, the perfective marker becomes null in the output string.

---

a 'he looks her over'.

b 'he hit you to such effect that she cried'.

c 'he has not taken out a book'.

BA and BEI

*MR25.

$$\begin{bmatrix} \text{BA} \\ \text{BEI} \end{bmatrix} \quad \text{---->} \quad \begin{bmatrix} \{ \text{bǎ} \\ \text{jiāng} \} \\ \{ \text{bèi} \\ \text{gěi} \} \end{bmatrix}$$

*yīfú BEI xǐ ganjing le ---> yīfú gěi xǐ gānjing le[a]

*tā BA fàn chī -le le ---> *tā bǎ fàn chī -le le (27)[b]

The formatives BA and BEI, introduced in PTR8 and PTR9 respectively, are realized in morphophonemic form by this rule. Variant forms of BEI which consist of a pair of particles such as 'ràng ... gěi' have not been included.

BU

*MR26.

$$\text{BU} \quad \text{---->} \quad \left\{ \begin{array}{lll} \text{méi} & \text{in} ____ & \text{yǒu} \\ \text{bú} & \text{in} ____ & \text{x} \\ \text{bù} & \text{elsewhere} & \end{array} \right\}$$

where x = any form that carries tone

*māma BU yǒu shū ---> māma méi yǒu shū[c]

*tā ná BU ná shū chū mán lai ---> tā ná bù ná shū chū mén lai[d]

The general negative formative BU assumes different morphophonemic forms according to the tone or shape of the following form. BU is realized as méi only when it occurs before yǒu, which may be a possessive verb. Otherwise it is configurated as bù with the fourth tone, unless it is followed by another form with the same tone, in which case it bears the second tone.

---

a 'the clothes are washed clean'.

b *he bǎ rice eat ASP F.

c 'mother does not have books'.

d 'Is he going to carry the book and come out'.

le

*MR27. $\underset{1}{X + \text{-le}} \quad \underset{2}{le} \quad \Longrightarrow \quad 1$

*tā bǎ fàn chī -le le ⟹ tā bǎ fàn chī le[a]

The perfective aspect marker is identical in form with the final particle le. Therefore, if they occur in succession, one of them has to be deleted. The le which is left may either be the aspect marker or the final particle. Either interpretation will leave the grammatical analysis unchanged.

The present rule is very similar to T_{le} in SRM.

V. Summary, and Residual Problems

It is hoped that the above analysis solves some of the problems involved with resultative verbs and other types of complements. According to the present solution, the so-called resultative verbs may be classified into two main groups. The more productive group is generated from generalized transformations. Three embedding transformations (ETR2, 3, 4) are needed to account for all the varieties of the species. ETR2 generates "resultative verbs" with a directional complement, followed by objects, or whose first element carries aspect markers; ETR3 generates resultative verbs with a resultative complement, which may have both the BA and the BEI transformations; ETR4 generates resultative verbs with a resultative complement, but which may not have the BEI transformation.

The main reason for generating these resultative verbs by generalized transformation, and not by constituent structure rules, is that, disregarding transformational history, resultative verbs of similar structure behave differently with regard to the BEI-transformation. Since information of the transformational history of these verbs is essential, it is not plausible to handle the problem in the constituent structure.

---

[a] 'he ate the rice'.

A less productive group of resultative verbs, considered to be compounds, has among its members at least one bound form. These verbs are divided into two types (V_{tc} and V_{tp}) in the constituent structure component, according to whether they can have the BA-transformation.

There still remain other problems which require further investigation. For example, sometimes the underlying strings of some resultative verbs cannot be readily recognized. Consider the following examples:

tā jiǎng kèwén[a]
kèwén qīngchu[b] ⟹ tā jiǎng qīngchu kèwén[c]

The resultant string is comparable to those generated from ETR3, and thus may undergo the BEI transformation (PTR9):

ta jiǎng qingchu kèwén ⟹ kèwén gěi jiǎng qīngchu[d]

However, it is not so easy to analyze the second underlying string of tā kàn qīngchu kèwén;[e] its first underlying string, no doubt, is tā kàn kèwén.[f] Is the second underlying string kèwén qīngchu,[g] or ta qīngchu,[h] or Nom qīngchu, where Nom indicates an impersonal Nom? A tentative solution is to accept all possibilities. If the second underlying string is kèwén qīngchu or Nom qīngchu the string generated --- tā kàn qīngchu kèwén may have the BEI-transformation; otherwise, it does not have the BEI-transformation.

Further investigation should also be made of the potential verbs, which occur only in the potential mode.

Another kind of verbal complement dealt with in this paper is the de-complement (ETR5c), which is always introduced by de, and may be either

---

a 'he explains the lesson'.
b 'the lesson is clear'.
c 'he explained the lessons clearly'.
d 'the lessons are explained clearly'.
e 'he read the lesson so that he (or it) is clear'.
f 'he reads the lesson'.
g 'the lesson is clear'.
h 'he is clear'.

descriptive or resultative in nature. It is found that it is more economical to treat this complement marker de and the potential de as derived from one and the same source. Other types of verbal complement touched upon are those that can follow V_{tel} and V_{quo}.

The type of nominal modification discussed here is pre-nominal de-modification (ETR1). Only a brief and general sketch of a rule is given. There remains much to be investigated. For example, the de-modification included by the rule is confined to the type derived from a whole string.

Related to this is the problem of the possessive, which is generated by the de-modification transformation, under the condition of having selected the possessive verb, and by a later V_p deletion rule. However, the generation of such expressions as tā de hòu-tou[a] has not been explored. Evidently, it is not to be covered by the possessive transformation, but generated probably in the constituent structure.

The BA, the BEI, and the potential transformations are directly related to the problem of the resultative verbs. Other problems touched upon include reduplication, ellipsis, inversion, and so on.

The present analysis by no means claims to have given the best solution to some of the problems outlined in the paper. Much remains to be revised and reformulated. It is hoped that it will at least give some stimulus to further investigation.

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[a] *he de back = 'behind him'.

Footnotes

1. I am indebted to W. S-Y. Wang, C.J. Fillmore, M.J. Hashimoto, and S. Annear for valuable suggestions and criticisms.

2. Tsai, A.T. "Chinese Potential Verb Form," Project on Linguistic Analysis (POLA) Report No. 7. Columbus, Ohio, 1964.

3. Ibid.

   Wang, J. P-L. The Resultative Construction-Type in Chinese. M.A. thesis, Cornell University, 1960.

4. Zhōu, Chí-míng. Guówén Bǐjiào Wénfǎ. Taipei, 1958.

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   Láng, Jùn-zhāng. Hànyǔ Yǔfǎ. Shenyang, 1956.

5. Zhōngguó Kēxuéyuàn Yǔyán Yǎnjiùsuǒ. "Bǔyǔ," Yǔfǎ Jiǎnghuà. Peking, 1953.

   "The Potential Complement," Modern Chinese Reader. Peking, 1958.

   Wáng, Lì. Zhōngguó Xiàndaì Yǔfǎ. Hongkong, 1959.

   -------. Zhōngguo Yǔfǎ Lǐlùn. Shanghai, 1957.

6. Wang, W. S-Y. "Some Syntactic Rules in Mandarin," POLA Report No. 3r, pp. 32-53; also in Proceedings of the IX International Congress of Linguists, pp. 390-401, to appear.

7. Negation repeatability, as seen in such expressions as tā bú shì bù gǎn bú qù ("it is not that he does not dare not to go"), is not dealt with in this paper.

8. Scovel, T.S. Revised version of SRM rules. Unpublished work paper, Summer 1963.

9. Fillmore, C.J. "The Position of Embedding Transformations in a Grammar," POLA Report No. 3r, pp. 1-31; also in Word, Aug., 1963, pp. 208-31.

10. I have had the pleasure of reading the section on the "Restrictive and Descriptive Uses of de" in the unpublished grammar of Y-R. Chao. In this paper the term "definite" is preferred for this construction.

Appendix 1
Summary of Rules

CS1. $S \rightarrow Nom + VP\ (\underline{F})$ — Sentence; Nominal; Verb Phrase; Final Particle

CS2. $VP \rightarrow (BU) \left\{ \begin{matrix} VB_{st} \\ VB_{nst} \\ VB_{m} \end{matrix} \right\}$ — Stative Verbal; Nonstative Verbal; Middle Verbal

CS3. $VB_{st} \rightarrow$

$$\left\{ \begin{matrix} \left\{ \begin{matrix} shi \\ (\underline{EMP}) \end{matrix} \right\} \underline{V_{qua}} \quad Nom \\ \left(\left\{ \begin{matrix} EMP \\ (de)\ C \end{matrix} \right\} \right) \quad \left\{ \begin{matrix} \underline{ADJ} \\ \underline{V_{qub}} + Nom \end{matrix} \right\} \\ \underline{V_{loc}} + Nom_{loc} \end{matrix} \right\}$$

Emphatic Marker Quality Verb Type a; Adjective; Complement Quality Verb Type b; Locative Verb; Locative Nominal

CS4. $VB_{nst} \rightarrow$

$$\left\{ \begin{matrix} (\underline{ASP}) \left\{ \begin{matrix} \left\{ \begin{matrix} \underline{V_{tel}} \\ \underline{V_{quo}} \end{matrix} \right\} + Nom\ C \\ \left\{ \begin{matrix} \underline{V_{p}} \\ \underline{V_{c}} \end{matrix} \right\} Nom \\ \underline{V_{do}} + Nom + Nom\ (FP) \end{matrix} \right. \\ \left(\left\{ \begin{matrix} ASP \\ de \end{matrix} \right\} \right) \left\{ \begin{matrix} \underline{V_{mo}}\ (Nom_{loc} \mid \underline{DIR}) \\ \left\{ \begin{matrix} V_{tr} + Nom \\ (C) V_{intr} \end{matrix} \right\} \end{matrix} \right\} (FP) \end{matrix} \right\}$$

Aspect Marker; Telescoping Verb; Quotative Verb; Possessive Verb; Conceptual Verb; Double-Object Verb; Frequency Phrase; Motion Verb; Directional Marker; Transitive Verb; Intransitive Verb

CS5. VB_m ---> ({ ASP / EMP / de (C) }) $\underline{V_m}$ + Nom — Middle Verb

CS6. V_{tr} ---> { V_{ta} if: C + ____ ; { V_{ta} / $\underline{V_{tc}}$ / $\underline{V_{tp}}$ } elsewhere } — Active Transitive Verb; Complement Transitive Verb; Perceptual Transitive Verb

CS7. V_{intr} ---> { $\underline{V_{in}}$ / $\underline{V_{ia}}$ } — Nonactive Intransitive Verb; Active Intransitive Verb

CS8. FP ---> Num { R_v / $\underline{Cl_v}$ } if: { V_{ta} + Nom / V_{ia} } ____ — Verbal Reduplicative; Verbal Classifier

CS9. FP ---> Num + Cl_v

CS10. V_{ta} ---> { $\underline{V_{taa}}$ / $\underline{V_{tab}}$ / $\underline{V_{tam}}$ } — Active Transitive Verb Type a; Active Transitive Verb Type b; Active Transitive Verb of movement

CS11. Nom ---> NP (MOD) — Modifier Formative

CS12. NP ---> { (DET) { N / N_{pr} } if: ____ + MOD ; { (DET) { N / N_{pr} } / $\underline{PP}$ (men) } elsewhere } — Determiner; Noun; Proper Name; Pronominal

CS13. N ---> { N_h (men) / $\underline{N_{nh}}$ } — Human Noun; Nonhuman Noun

CS14. DET ---- (D)(Num) Cl — Demonstrative; Numeral; Classifier

CS15. Nom_{loc} ---> N_{nh} + li

Embedding Transformations

MOD

ETR1. Given a pre-sentence of the form

$$\frac{X}{1}\ \frac{NP}{2}\ \frac{Y}{3}$$

apply the rule

MOD ---> 1 3 de

in the matrix string

X' + NP' + MOD + Y'

where: (1) NP = NP'

(2) X ≠ Nom

(3) X does not end with BA or BEI

(4) Y does not end with F_y or $\underline{li}$ without V_{loc}

(5) Y does not begin with MOD

This rule does not apply to strings of alternative questions.

Directional

ETR2. Given a pre-sentence of the form

$$\frac{Nom}{1}\ \frac{V_{mo} + DIR}{2}$$

apply the rule

C ---> 2

in the matrix string

$$Nom' + X + C \left\{ \begin{matrix} \left\{ \begin{matrix} V_{tab} \\ V_{tam} \end{matrix} \right\} \\ V_{ia} \end{matrix} \quad Nom'' \right\} \quad Y$$

where: (1) Nom = Nom' if the matrix string contains V_{ia}; otherwise

(2) Nom = Nom" where Nom" is not contained in another Nom

(3) Y does not contain R_v

Resultative I

ETR3a. Given a pre-sentence of the form

$$\underset{1}{\text{Nom}} \quad \underset{2}{\left\{\begin{matrix} V_{intr} \\ ADJ \end{matrix}\right\}}$$

apply the rules

C ---> 2

in the matrix string

$Nom' + X' + C + V_{ta} + Nom'' + Y'$

where: (1) Nom = Nom"

(2) Y' does not contain R_v

ETR3b. Given a pre-sentence of the form

$$\underset{1}{\left\{\begin{matrix} NP\ NP'\ V_p\ de \\ NP'\ \ de\ \ NP \end{matrix}\right\}} \qquad \underset{2}{\left\{\begin{matrix} V_{intr} \\ ADJ \end{matrix}\right\}}$$

apply the rules

C ---> 2

Y' ---> 1 + Y'

in the matrix string

$X' + NP'' + C + V_{ia} + Y'$

where: (1) NP' = NP"

(2) Y' does not contain R_v

Resultative II

ETR4. Given a pre-sentence of the form

$$\underset{1}{\text{Nom}} \quad \underset{2}{\left\{\begin{matrix} V_{intr} \\ ADJ \end{matrix}\right\}}$$

apply the rule

C ---> 2

in the matrix string

$$Nom' + X + C \left\{\begin{matrix} V_{ta} \\ V_{intr} \\ ADJ \end{matrix}\right\} \quad (Nom'')\ Y$$

where: (1) Nom' = Nom $\neq$ Nom"

(2) Y does not contain R_v or any verb

Complement

ETR5a. Given a pre-sentence of the form

$\frac{\text{Nom}}{1}\ \frac{\text{X}}{2}$

apply the rule

C ---> 2

in the matrix string

$X' + V_{tel} + Nom' + C + Y'$

where: (1) Nom = Nom'

(2) X contains $\{V_{tel}, V_{quo}, V_{do}, V_{mo}, V_{tr}, V_{intr}, V_{m}\}$

(3) X does not contain de+C, or EMP

ETR5b. Given a pre-sentence of the form

S

apply the rule

C ---> S

in the matrix string

$X + V_{quo} + C + Y$

ETR5c. Given a pre-sentence of the form

S

apply the rule

C ---> S

in the matrix string

X + de + C + Y

where S does not contain shi and does not end with F

Preliminary Simple Transformations

de + C

*PTR6. $\frac{\text{X}}{1}\ \frac{\text{de + C}}{2}\ \frac{\text{V (Nom) (FP)}}{3}\ \frac{\text{(F)}}{4}$ ====> 1 3 2 4

where V = any verb

Permutation

*PTR7a. $\underset{1}{X}\ \underset{2}{(DET)}\ \underset{3}{\begin{Bmatrix} N \\ N^{pr} \end{Bmatrix}}\ \underset{4}{MOD}\ \underset{5}{Y} \Longrightarrow 1\ \begin{Bmatrix} (2) & 4 \\ 4 & (2) \end{Bmatrix}\ 3\ 5$

*PTR7b. $\underset{1}{X}\ \underset{2}{C}\ \underset{3}{V}\ \underset{4}{Y} \Longrightarrow 1\ 3\ 2\ 4$

where V = any verb

BA

PTR8. $\underset{1}{Nom + X}\ \underset{2}{(ASP)\ Y}\ \underset{3}{Nom'}\ \underset{4}{Z\ (F)} \Longrightarrow 1\ BA\ 3\ 2\ 4$

where: (1) X may not contain <u>de</u> if Y contains a simple verb.

(2) Y begins with $\{V_{ia}, V_{ta}, V_{tc}, V_{do} + Nom, V_{m}\}$

(3) 2 does not contain a simple V (except V_{do}) alone or Z is not zero.

BEI

PTR9. $\underset{1}{Nom}\ \underset{2}{X}\ \underset{3}{(ASP)\ \begin{Bmatrix} V_{tr} \\ V_{ia} \end{Bmatrix}\ (V)\ (DIR)}\ \underset{4}{Nom'}\ \underset{5}{Y} \Longrightarrow 4\ 2\ BEI\ (1)\ 3\ 5$

where: (1) V = any verb

(2) X does not contain de

(3) Y does not contain Nom

This rule does not apply to strings generated from ETR4.

Possessive

*PTR10. $\underset{1}{X}\ \underset{2}{V_{p}}\ \underset{3}{de + Y} \Longrightarrow 1\ 3$

where X does not contain ASP

Ellipsis

PTR11. $\underset{1}{X + V}\ \underset{2}{Nom}\ \underset{3}{Y} \Longrightarrow 1\ 3$

where V = any verb except V_{quo}

This rule is nonrecursive if V = V_{do}

Reduplicative Verb

PTR12. $\underset{1}{X + V}\ \underset{2}{(Nom)}\ \underset{3}{Num}\ \underset{4}{R_v}\ \underset{5}{Y} \Longrightarrow 1\ 4\ 2\ 5$

where: (1) X does not contain ASP
(2) V = any verb

Reduplication

*PTR13. $\underset{1}{X + V + Nom\ (FP)}\ \underset{2}{de + S + Y} \Longrightarrow 1\ R_v\ 2$

Deletion

*PTR14a. $\underset{1}{X + Nom + Y + de}\ \underset{2}{Nom'}\ \underset{3}{Z} \Longrightarrow 1\ 3$

where Nom = Nom'

*PTR14b. $\underset{1}{X + ADJ + de + EMP}\ \underset{2}{ADJ}\ \underset{3}{Y} \Longrightarrow 1\ 3$

DIR

PTR15a. $\underset{1}{X}\ \underset{2}{DIR}\ \underset{3}{Nom}\ \underset{4}{Y} \Longrightarrow 1\ 3\ 2\ 4$

PTR15b. $\underset{1}{X + V_{tam}}\ \underset{2}{V_{mo} + DIR}\ \underset{3}{Nom}\ \underset{4}{Y} \Longrightarrow 1\ 3\ 2\ 4$

Transposition

PTR16. $\underset{1}{Nom}\ \underset{2}{X\ \left\{\begin{matrix}V_{do} + Nom' \\ \begin{pmatrix}V_{ia} \\ V_{tr}\end{pmatrix} \quad (V)\end{matrix}\right\}}\ \underset{3}{Nom''}\ \underset{4}{Y} \Longrightarrow \begin{Bmatrix}3 & 1 \\ 1 & 3\end{Bmatrix} 2\ 4$

where Y does not contain R_v or de

Conjoining Transformations

Motion

CTR17. $\left.\begin{matrix}\underset{1}{Nom + X + V_{tam} + Nom' + Y} \\ \underset{2}{Nom''}\ \underset{3}{X' + V_{mo} + Y'}\end{matrix}\right\} \Longrightarrow 1\ 3$

where: (1) Nom = Nom"
(2) Y does not contain F

Alternative Question

CTR18. $\left.\begin{array}{l} \underset{1}{X + VB} \\ \underset{2}{X}\ \underset{3}{BU + VB\ (F)} \end{array}\right\}$ ⟹ 1 3

where VB = any kind of verbal

Final Simple Transformations and Morphophonemic Rules

Deletion

FTR19. $\underset{1}{X}\ \underset{2}{VB}\ \underset{3}{BU + Y}$ ⟹ 1 *VB 3

where: (1) *VB = the left-most constituent of VB
(2) X does not contain de

Potential

*FTR20a. $X\ de\ \left\{\begin{array}{l} V \\ V + V' \\ \underset{3}{v - v'} \end{array}\right\}\ Y$ ⟹ 1 3 2 4

$\underset{1}{\ }\ \underset{2}{\ }\ \underset{4}{\ }$

where: (1) V = any verb
(2) v = member of a compound verb

*FTR20b. $X\ BU\ de\ \left[\begin{array}{l} V \\ \{V + V'\} \\ \underset{4}{\{v - v'\}} \end{array}\right]\ Y$ ⟹ $\left[\begin{array}{lllll} 1 & 4 & 2 & 3 & 5 \\ 1 & 4 & 2 & & 5 \end{array}\right]$

$\underset{1}{\ }\ \underset{2}{\ }\ \underset{3}{\ }\ \underset{5}{\ }$

conditions same as for *FTR20a.

Reflexive

*FTR21. $\underset{1}{Nom + X}\ \underset{2}{Nom'}\ \underset{3}{Y}$ ⟹ 1 zijǐ 3

where Nom = Nom'

This rule is optional if Nom = tā.

Aspect

*FTR22a. $\underset{1}{X}\ \underset{2}{ASP}\ \underset{3}{V_{ia}}\ \underset{4}{V_{mo} + Y}$ ⟹ 1 3 2 4

where Y does not contain Nom_{loc}

FTR22b. $\underset{1}{X}\ \underset{2}{ASP}\ \underset{3}{V\ (V')\ (DIR)}\ \underset{4}{Y}$ ⟹ 1 3 2 4

where V = any verb

$\underline{R_V}$

*MR23.

$$\frac{X + V\ (Nom)\ (\ \left\{\begin{matrix}FP\\Num\end{matrix}\right\}\ )}{1}\ \frac{R_V}{2}\ \frac{Y}{3} \Longrightarrow\ 1\ V\ 3$$

where: (1) V on the left side of the arrow = any verb
(2) V on the right side of the arrow = verb identical with the verb on the left side of the arrow

Mei

*MR24.

$$\frac{X}{1}\ \frac{BU}{2}\ \frac{Y}{3}\ \ \frac{\left[\begin{matrix}-le\\-guo\end{matrix}\right]}{4}\ \frac{Z}{5} \Longrightarrow\ 1\ méi\ 3\ \left[\begin{matrix}\emptyset\\-guo\end{matrix}\right]\ 5$$

BA and BEI

*MR25.

$$\left[\begin{matrix}BA\\BEI\end{matrix}\right] \longrightarrow \left[\begin{matrix}\left\{\begin{matrix}bǎ\\jiāng\end{matrix}\right\}\\\left\{\begin{matrix}bèi\\gěi\end{matrix}\right\}\end{matrix}\right]$$

BU

*MR26.

$$BU \longrightarrow \left\{\begin{matrix}méi & \text{in ___ } yǒu\\bú & \text{in ___ } x\\bù & \text{elsewhere}\end{matrix}\right\}$$

where x = any form that carries tone

le

*MR27.

$$\frac{X + -le}{1}\ \frac{le}{2} \Longrightarrow\ 1$$

Appendix 2
Additional Sample Sentences

Additional examples are given below to illustrate the operation of the transformational rules under which they are listed separately.

ETR1.

nèi ge háizi gěi wǒ dōngxi[a]
*nèi ge háizi MOD zài xuéxiào lǐ[b]
⟹ nèige háizi gěi wǒ dōngxi de zài xuéxiào lǐ (7a)[c]

zhè běn shū hěn hǎo[d]
*tā -le mǎi zhè běn shū MOD[e]
⟹ *tā -le mǎi zhè běn shū hěn hǎo de (7a, 22b)[f]

Shǐ Měi pà gǒu[g]
*gǒu MOD -le yǎo rén[h]
⟹ *gǒu Shǐ Měi pà de -le yǎo rén (7a, 22b)[i]

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a 'that child gave me things'.
b *that Cl child MOD locate school in.
c *that Cl child give I thing de locate school in.
d 'this book is very good'.
e *he ASP buy this Cl book MOD.
f *he ASP buy this Cl book very good de.
g 'Shimei is afraid of dogs'.
h *dog MOD ASP bite people.
i *dog Shimei afraid of de ASP bite people.

ETR2. *māma C tūn fàn[a] / fàn xià qu[b] ⟹ *māma xià qu tūn fàn (7b)[c]

*mèimei C -le tiào[d] / mèimei shàng lai[e] ⟹ *mèimei shàng lai -le tiào (7b, 22a)[f]

ETR3a. *tā C dǎ nèi zhī māo[g] / nèi zhī māo pǎo[h] ⟹ *tā pǎo dǎ nèi zhī māo (7b)[i]

ETR3b. *tā C -le hǎn[j] / tā de hóulong yǎ[k] ⟹ *tā yǎ -le hǎn tā de hóulong (7b, 21, 22b)[l]

ETR4. *wǒ -le C lèi le[m] / wǒ sǐ[n] ⟹ *wǒ -le sǐ lèi le (7b, 22b, 27)[o]

*tā C kū le[p] / tā bìng[q] ⟹ *tā bìng kū le (7b)[r]

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[a] *mother C swallow rice.

[b] 'rice goes down'.

[c] *mother down DIR swallow rice.

[d] *sister C ASP jump.

[e] 'sister comes up'.

[f] *sister up DIR ASP jump.

[g] *he C hit that Cl cat.

[h] 'that cat runs'.

[i] *he run hit that Cl cat.

[j] *he C ASP cry.

[k] 'his throat is sore'.

[l] *he sore ASP cry he de throat.

[m] *I ASP C tired F.

[n] 'I die'.

[o] *I ASP die tired F.

[p] *he C cry F.

[q] 'he is sick'.

[r] *he sick cry F.

ETR5a. *tā qǐng xiānsheng C[a]
xiānsheng gěi tā yī fū huà[b] ⟹ tā qǐng xiānsheng gěi tā yī fū huà[c]

*māma jiào wǒ C[d]
wǒ qǐng nǐ jiào tā lái[e] ⟹ māma jiào wǒ qǐng nǐ jiào tā lái[f]

ETR5b. *wǒ shuō C[g]
tā chī wán fàn[h] ⟹ wǒ shuō tā chī wán fàn[i]

mèimei shuō C[j]
*nǐ xiàng BU xiàng māma[k] ⟹ *mèimei shuō nǐ xiàng BU xiàng māma (26)[l]

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a *he invite teacher C.
b 'the teacher gave him a picture'.
c 'he asked the teacher to give him a picture'.
d *mother ask I C.
e 'I ask you to ask him to come'.
f 'mother asked me to ask you to ask him to come'.
g *I say C.
h 'he finished eating'.
i 'I said he had finished eating'.
j *sister say C.
k *you resemble not resemble mother.
l 'sister said if you resemble mother'.

ETR5c.

*háizi de+C gāo[a]
háizi hěn gāo[b]
⟹ *háizi de háizi hěn gāo gāo (6, 14a, 14b)[c]

*xuésheng de+C pà xiānsheng[d]
*xuésheng BU de tūn xià fàn qu[e]
⟹ *xuésheng de xuésheng BU de tūn xià fàn qu pà xiānsheng (6, 13, 14a, 20b, 26)[f]

*chē de+C zǒu[g]
chē kuài de hěn[h]
⟹ *chē de chē kuài de hěn zǒu (6, 14a)[i]

*tā de+C xiǎng māma[j]
*tā BU chī fàn[k]
⟹ *tā de tā BU chī fàn xiǎng māma (6, 13, 14a, 26)[l]

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[a] *child de C tall.
[b] 'the child is very tall'.
[c] *child de child very tall tall.
[d] *student de C afraid of teacher.
[e] *student not can swallow down rice DIR.
[f] *student de student not can swallow down rice DIR afraid of teacher.
[g] *car de C run.
[h] 'cars are very quick'.
[i] *car de car quick de very run.
[j] *she de C think of mother.
[k] *she not eat rice.
[l] *she de she not eat rice think of mother.

*PTR6. *háizi de háizi hěn gāo gāo ⟹ *háizi gāo de háizi hěn gāo (14a, 14b)[a]

*xuésheng de xuésheng BU de tūn xià fàn qu pà xiānsheng ⟹ *xuésheng pà xiānsheng de xuésheng BU de tūn xià fàn qu (13, 14a, 20b, 23, 26)[b]

*chē de chē kuài de hěn zǒu ⟹ *chē zǒu de chē kuài de hěn (14a)[c]

*tā de tā BU chī fàn xiǎng māma ⟹ *tā xiǎng māma de tā BU chī fàn (13, 14a, 23, a6)[d]

*PTR7a. *nèige háizi gěi wǒ dōngxi de zài xuéxiào lǐ ⟹ nèige gěi wǒ dōngxi de háizi zài xuéxiào lǐ[e]

OR gěi wǒ dongxi de nèige háizi zài xuéxiào lǐ[f]

*ta -le mǎi zhè běn shu hěn hǎo de ⟹ *ta -le mǎi zhè běn hěn hǎo de shu (22b)[g]

OR *ta -le mǎi hěn hǎo de zhè běn shu (22b)[h]

*gǒu Shǐ Měi pà de -le yǎo rén ⟹ *Shǐ Měi pà de gǒu -le yǎo rén (22b)[i]

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a *child tall de child very tall.

b *student afraid of teacher de student not can swallow down rice DIR.

c *car run de car quick de very.

d *she think of mother de she not eat rice.

e 'that child, who gave me things, was in school'.

f 'the child who gave me things was in school'.

g *he ASP buy this Cl very good de book.

h *he ASP buy very good de this Cl book.

i *Shi Mei afraid of de dog ASP bite people.

*PTR7b. *māma xià qu tūn fàn ⟹ māma tūn xià qu fàn[a]

*mèimei shàng lai -le tiào ⟹ *mèimei -le tiào shàng lai (22a)[b]

*tā yǎ -le hǎn tā de hóulong ⟹ *tā -le hǎn yǎ tā de hóulong (21, 22b)[c]

*tā pǎo dǎ nèi zhī māo ⟹ tā dǎ pǎo nèi zhī māo[d]

*wǒ -le sǐ lèi le ⟹ *wǒ -le lèi sǐ le (22b, 27)[e]

*tā bìng kū le ⟹ tā kū bìng le[f]

*PTR8. tā dǎ pǎo nèi zhī māo ⟹ *tā BA nèi zhī māo dǎ pǎo (25)[g]

nǐ de péngyou gěi wǒ shū[h] ⟹ *nǐ de péngyou BA shū gěi wǒ (25)[i]

PTR9. *ta -le hǎn yǎ ta de hóulong ⟹ *ta de hóulong BEI -le hǎn yǎ (22b, 25)[j]

háizi mán-guo nǐ le[k] ⟹ *nǐ BEI háizi mán-guo le (25)[l]

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a 'mother swallowed down the rice'.

b *sister ASP jump up DIR.

c *he ASP cry sore he de throat.

d 'he hit the cat so that it ran away'.

e *I ASP tired die F.

f 'he cried to such effect that he was sick'.

g *he BA that Cl cat hit run.

h 'your friend gives me books'.

i *you de friend BA book give I.

j *he de throat BEI ASP cry sore.

k *child deceive you F.

l *you BEI child deceive F.

*PTR10. *tā yǒu de mèimei hē chá[a] ⟹ tā de mèimei hē chá[b]
*nǐ yǒu de nèi jiàn yīfu hěn jǐn[c] ⟹ nǐ de nèi jiàn yīfu hěn jǐn[d]

PTR11. wǒ shuō tā chī wán fàn ⟹ wǒ shuō tā chī wán[e]
nèi ge gěi wǒ dōngxi de háizi zài xuéxiào lǐ ⟹
nèi ge gěi dōngxi de háizi zài xuéxiào lǐ[f]

PTR12. *māma xiào yī R_v[g] ⟹ *māma xiào R_v (23)[h]
*nǐ bān dōngxi yī R_v[i] ⟹ *nǐ bān R_v dōngxi (23)[j]

*PTR13. *xuésheng pà xiānsheng de xuésheng BU de tūn xià fàn qu ⟹
*xuésheng pà xiānsheng R_v de xuésheng BU de tūn xià fàn qu (14a, 20b, 23, 26)[k]
*tā xiǎng māma de tā BU chī fàn ⟹ *tā xiǎng māma R_v de tā BU chī fàn (14a, 23, 26)[l]

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a *he have de sister drink tea.
b 'his sister drinks tea'.
c *you have de that Cl dress very tight.
d 'that dress of yours is very tight'.
e 'I said he has finished eating'.
f 'that child, who gave things, was in school'.
g *mother smile one R_v.
h *mother smile R_v.
i *you move thing one R_v.
j *you move R_v thing.
k *student afraid of teacher R_v de student not can swallow down rice DIR.
l *he think of mother R_v de he not eat rice.

*PTR14a. *háizi gāo de háizi hěn gāo ⟹ *háizi gāo de hěn gāo (14b)[a]

*chē zǒu de chē kuài de hěn ⟹ chē zǒu de kuài de hěn[b]

*xuésheng pà xiānsheng R_v de xuésheng BU de tūn xià fàn qu ⟹ *xuésheng pà xiānsheng R_v de BU de tūn xià fàn qu (20b, 23, 26)[c]

*tā xiǎng māma R_v de tā BU chī fàn ⟹ *tā xiǎng māma R_v de BU chī fàn (23, 26)[d]

*PTR14b. *háizi gāo de hěn gāo ⟹ háizi gāo de hěn[e]

PTR15a. māma tūn xià qu fàn ⟹ māma tūn xià fàn qu[f]

PTR15b. jiǎofu tiāo jin dōngxi lai[g] ⟹ jiǎofu tiāo dōngxi jin lai[h]

PTR16. nǐ de péngyou gěi wǒ shū le ⟹ shū nǐ de péngyou gěi wǒ le[i]
OR nǐ de péngyǒu shū gěi wǒ le[j]

jiǎofu tiāo jin dōngxi lai ⟹ dōngxi jiǎofu tiāo jin lai[k]
OR jiǎofu dōngxi tiāo jin lai[l]

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a *child tall de very tall.

b 'cars run very quickly'.

c *student afraid of teacher R_v de not can swallow down rice DIR.

d *he think of mother R_v de not eat rice.

e 'the child is very tall'.

f 'mother swallowed down the rice'.

g *porter carry in thing DIR.

h 'the porter carried in the things on his shoulder'.

i 'the book was given me by your friend'.

j 'your friend gave me the book'.

k 'the things were brought in by the porter'.

l 'the porter brought in the things'.

CTR17. jiǎofu tiāo dōngxi[a] } ⟹ jiǎofu tiāo dōngxi huí jiā qu[b]
jiǎofu huí jiā qu[b]

xuésheng fú xiānsheng[d] } ⟹ xuésheng fú xiānsheng shàng xuéxiào lai[f]
xuésheng shàng xuéxiào lai[e]

CTR18. mèimei pǎo de kuài } ⟹ *mèimei pǎo de kuài BU kuài (26)[g]
*mèimei pǎo de BU kuài

*xuésheng de tūn xià fàn qu } ⟹ *xuésheng de tūn xià fàn qu BU de tūn xià fàn qu (20b, 26
*xuésheng BU de tūn xià fàn qu

*nǐ de péngyou BA shū gěi wǒ } ⟹ *nǐ de péngyou BA shū gěi wǒ BU BA shū gěi wǒ (25, 26)[i]
*nǐ de péngyou BU BA shū gěi wǒ

FTR19. *nǐ de péngyou BA shū gěi wǒ BU BA shū gěi wǒ ⟹
*nǐ de péngyou BA BU BA shū gěi wǒ (25, 26)[j]

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a 'the porter carried the things'.
b 'the porter returned home'.
c 'the porter carried the things on his shoulder and went home'.
d 'the student upheld the teacher'.
e 'the student came to school'.
f 'the student upheld the teacher and came to school'.
g *sister run de quick not quick.
h *student can swallow down rice DIR not can swallow down rice DIR.
i *you de friend BA book give I not BA book give I.
j *you de friend BA not BA book give I.

*FTR20a. *háizi de mán-guo nǐ ⟹ hái-zi mán de guo nǐ[a]
*tā de pǎo[b] ⟹ tā pǎo de[c]

*FTR20b. *xuésheng pà xiānsheng R_v de BU de tūn xià fàn qu ⟹
*xuésheng pà xiānsheng R_v de tūn BU xià fàn qu (23, 26)[d]
*xuésheng de tūn xià fàn qu BU de tūn xià fàn qu ⟹
*xuésheng tūn de xià fàn qu tūn [illegible] fàn qu (26)[e]

*FTR21. *tā -le hǎn yǎ tā de hóulong ⟹ *tā -le hǎn yǎ zìjǐ de hóulong (22b)[f]

*FTR22a. *mèimei -le tiào shàng lai ⟹ mèimei tiào -le shàng lai[g]

*FTR22b. *tā -le mǎi zhè běn hěn hǎo de shū ⟹
tā mǎi -le zhè běn hěn hǎo de shū[h]
*Shǐ Měi pà de gǒu -le yǎo rén ⟹ Shǐ Měi pà de gǒu yǎo -le rén[i]
*wǒ -le lèi sǐ le ⟹ *wǒ lèi sǐ -le le (27)[j]
*tā -le hǎn yǎ zìjǐ de hóulong ⟹ tā hǎn yǎ -le zìjǐ de hóulong[k]
*tā de hóulong BEI -le hǎn yǎ ⟹ *tā de hóulong BEI hǎn yǎ -le (25)[l]

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a 'the child can deceive you'.
b *he can run.
c 'he can run'.
d *student afraid of teacher R_v de swallow not down rice DIR.
e *student swallow can down rice DIR swallow not can down rice DIR.
f *he ASP cry sore self de throat.
g 'sister jumped up here'.
h 'he bought this very good book'.
i 'the dog of which Shi Mei is afraid bit people'.
j *I tired die ASP F.
k 'he cries to such effect that his throat is sore'.
l *he de throat BEI cry sore ASP.

*MR23. *māma xiào -le yī R_v[a] ⟹ māma xiào -le yī xiào[b]

*nǐ bān R_v dōngxi ⟹ nǐ bān bān dōngxi[c]

*tā xiǎng māma R_v de BU chī fàn ⟹ *tā xiǎng māma xiang de BU chī fàn (26)[d]

*xuésheng pà xiānsheng R_v de tūn BU xià fàn qu ⟹ *xuésheng pà xiānsheng pà de tūn BU xià fàn qu (26)[e]

*MR24. *ta BU jìn -guo xuéxiào[f] ⟹ tā méi jìn -guo xuésiào[g]

*MR25. *tā BA nèi zhī māo dǎ pǎo ⟶ tā jiāng nèi zhī māo dǎ pǎo[h]

*nǐ de péngyou BA shū gěi wǒ ⟶ *nǐ de péngyou bǎ shū gěi wǒ[i]

*nǐ de péngyou BA BU BA shū gěi wǒ ⟶ *nǐ de péngyou bǎ BU bǎ shū gěi wǒ (26)[j]

*nǐ BEI háizi mán -guo le ⟶ nǐ bèi háizi mán -guo le[k]

*ta de hóulong BEI hǎn yǎ -le ⟶ ta de hóulong gěi hǎn yǎ -le[l]

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a *mother smile ASP one R_v.

b 'mother smiled a little'.

c 'you move the things'.

d *he think of mother think de not eat rice.

e *student afraid of teacher afraid de swallow not down rice DIR.

f *he not enter ASP school.

g 'he has not attended any school'.

h 'he hit that cat so that it ran away'.

i 'your friend gave the book to me'.

j *you de friend bǎ not bǎ book give me.

k 'you are deceived by the child'.

l 'his throat was cried sore'.

*MR26. *mèimei shuō nǐ xiàng BU xiàng māma ---> mèimei shuō nǐ xiàng bù xiàng māma[a]

*mèimei pǎo de kuài BU kuài ---> mèimei pǎo de kuài bú kuài[b]

*xuésheng tūn de xià fàn qu tūn BU xià fàn qu --->
xuésheng tūn de xià fàn qu tūn bú xià fà qu[c]

*tā xiǎng māma xiǎng de BU chī fàn ---> tā xiǎng māma xiǎng de bù chī fàn[d]

*xuésheng pà xiānsheng pà de tūn BU xià fàn qu --->
xuésheng pà xiānsheng pà de tūn bú xià fàn qu[e]

*MR27. *wǒ lèi sǐ -le le ===> wǒ lèi sǐ le[f]

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a 'sister said whether you think of mother'.

b 'Does sister run quickly or not'.

c 'Can the student swallow down the rice or not'.

d 'he thinks of mother so much that he will not eat'.

e 'the student is so afraid of the teacher that he cannot swallow down the rice'.

f 'I am tired to death'.